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ABSTRACT

This publication provides a summary and update of school bus-safety activities conducted by the National Highway Traffic Safety Administration (NHTSA). This report discusses Congressional mandates and NHTSA's actions to improve school-bus safety (which include programs that affect human behavior and motor-vehicle safety performance), the magnitude of school bus-related injuries and fatalities, and current agency activities to make school-bus transportation even safer. Following a review of national safety standards and actions, information is presented on the magnitude of the school-bus problem and pedestrian-related fatalities. Regarding the seat belt issue, the National Academy of Science concluded that the overall benefits of seat belts on large school buses were insufficient to justify a federal requirement for mandatory installation. Other sections describe current amendments under consideration for vans used as school buses and current and future NHTSA activities. A conclusion is that school-bus transportation is one of the safest forms of transportation and that most school-bus crashes are minor. Although buses cannot be designed to withstand catastrophic crashes, the agency will continue to safeguard students who use school-bus transportation. Five figures are included. (LMI)

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ED 364 978

School Bus Safety Report

U.S. Department of Transportation
National Highway Traffic Safety Administration

May 1993

I. Introduction

This report has been prepared to provide a summary and update of school bus safety activities conducted by the National Highway Traffic Safety Administration (NHTSA). The report discusses Congressional mandates and NHTSA's actions to improve school bus safety (which include programs affecting human behavior and motor vehicle safety performance), the magnitude of school bus-related injuries and fatalities and current agency activities to make school bus transportation even safer.

II. Background

Congress enacted the Highway Safety Act of 1966 which established a national program to reduce motor vehicle crashes, injuries, and fatalities. The legislation required the establishment of Uniform Highway Safety Program Standards around which states and communities were to organize their safety programs. Federal grants to assist states in conducting comprehensive highway safety programs were provided by this statute.

By 1972, a total of 18 program standards had been established. On several occasions since then, Congress has modified the program to provide more flexibility to the states and to permit targeting of resources on the most pressing highway safety problems. These legislative changes included restrictions on the threat of Federal sanctions against states that did not fully comply with all 18 standards (1976), authorization for the Department of Transportation to select "priority" program areas in which states would be encouraged to use Federal highway safety funds (1981), and most recently, officially changing the highway safety "standards" to "guidelines" to reflect in a more accurate way the true nature of the highway safety program (1987).

A series of highway safety program manuals was designed to be used to assist states and communities in developing highway safety program policies and procedures suggested in the original program standards. Highway Safety Program Manual #17, Pupil Transportation Safety, was designed to provide a uniform national pupil transportation safety program, and to assist the states in achieving the highest level of safety in the transportation of school children. The safety standards in that manual deal with critical aspects of school bus safety such as:

- School Bus Driver Licensing
- School Bus Driver Training
- Loading and Unloading of Pupils
- Safe Riding Behavior Instructions of Children
- School Bus Maintenance and Inspection

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EA 025 581

- School Bus Operation and Accident Records

In 1991, Guideline #17 (originally Standard #17) was updated to deal with other critical aspects of school bus operations, including emergency evacuation drills. This revision is intended to provide the latest insights into specific pupil transportation safety improvements.

In addition to program support, NHTSA developed a National Bus Driver Training Program in 1974. Provisions were made for funding school bus safety programs through a special Congressional modification of the Highway Safety Act, Section 406. Approximately $31 million was allocated to the states between fiscal years 1977 and 1982 for school bus driver training. The allocation was apportioned based on the formula used to determine Section 402 funding.

Under the National Traffic and Motor Vehicle Act of 1966, NHTSA was given the authority to issue Federal Motor Vehicle Safety Standards (FMVSS) which must be met by vehicle manufacturers. From 1967 to 1973, the agency issued 19 safety standards that applied to school buses, covering such critical areas as brakes, glazing, seat systems and flammability. Agency actions under these two pieces of legislation increase probability of safer transportation to children using school buses.

In an effort to provide even higher levels of school bus safety, Congress, in 1974, directed the agency to establish or upgrade school bus safety standards in eight areas:

- Emergency exits
- Interior occupant protection
- Floor strength
- Seating systems
- Crashworthiness of the body and frame
- Vehicle operating systems
- Windshields and windows
- Fuel systems

As a result of the 1974 amendments, three new FMVSS were established:

FMVSS No. 220, School Bus Rollover Protection: Specified the structural resistance of buses in rollover-type accidents.

FMVSS No. 221, School Bus Body Joint Strength: Improved the body strength of buses through increased strength of the joints between panels that comprise the bus body.

FMVSS No. 222, School Bus Passenger Seating Crash Protection: Provided increased protection to passengers through a series of interior changes known as "compartmentalization" — high-backed, well-padded, and well constructed seats.

Additionally, the 1974 amendments resulted in changes to four existing safety standards:

FMVSS No. 105, Hydraulic Brake System: Increased the requirements for hydraulic brakes.

FMVSS No. 111, Rearview Mirrors: Established requirements for a "cross view" mirror to see in front of and along the side of the bus.

FMVSS No. 217, Bus Window Retention and Release: Modified the emergency exit requirements.

FMVSS No. 301, Fuel System Integrity: Established fuel system integrity requirements for school buses over 10,000 pounds gross vehicle weight rating (GVWR).

These requirements were effective for school buses manufactured on or after April 1, 1977. To meet these standards, school bus manufacturers have:

- Increased sheet metal panel seam strength
- Improved seating design (stronger, higher-backed, and better paddedseats)
- Improved hydraulic brake systems
- Added mirrors to allow the driver a better view of critical areas around the bus
- Added emergency exits to the rear and/or side of the bus
- Provided crash protection to the fuel tank and fuel systems

In 1987, the National Transportation Safety Board (NTSB) released a study on school bus crashes that occurred between August 1983 and March 1986, which involved post-April 1, 1977 school buses over 10,000 pounds GVWR. The NTSB report indicated that NHTSA's school bus standards had worked well to protect the passengers of school buses manufactured after April 1, 1977. This improvement was attributed primarily to the "compartmentalization" concept of FMVSS No. 222 that resulted in school bus passengers being well protected. The study found that only 3.6 percent of the school bus passengers involved in the NTSB selected crashes sustained more than moderate injuries or sustained only minor injuries. Most of the 13 deaths among school bus occupants in the NTSB-selected crashes (not all were pupils), resulted from severe collisions with large vehicles.

In May 1989, as required by the Surface Transportation and Uniform Relocation Assistance Act of 1987 (the Act), the National Academy of Sciences (NAS) issued Special Report No. 222, "Improving School Bus Safety," which covered the safety of occupants and persons boarding or exiting school buses. The report confirmed the high level of safety provided by the Nation's school bus fleet and recommended measures to improve pupil transportation safety further. The Act also required the Secretary of Transportation to review the findings of the report to determine "which safety measures are most effective in protecting the safety of school children while boarding, riding, and leaving school buses." Although all recommendations from the NAS report were deemed to have potential for reducing injuries and fatalities to users of school buses, not all were considered to be of equal merit. NHTSA issued a Federal Register notice on July 13, 1989, describing the agency's assessment of the various recommendations.

Additionally, the Act gave the Secretary of Transportation the option of designating State Highway Safety Program Funds for fiscal years 1989, 1990, and 1991 (authorized under Section 402) to be used specifically for school bus safety. Consistent with the spirit of the legislation, NHTSA set aside $4.5 million in fiscal years 1990 and 1991 to be used to implement those countermeasures deemed to be "most effective" and "effective." State and local governments responded enthusiastically by planning, programming, and obligating these funds to address identified problems.

In October 1989, NTSB issued "Crashworthiness of Small Post-Standard School Buses." This study reported on the crash performance of small post-standard school buses and vans used for school transportation. Based upon this study, NTSB issued recommendations which focused on the following issues: design of restraining barriers; feasibility of

providing lap/shoulder belts or other restraints with upper torso support for passengers; deficiencies in roof and joint strength; lack of Federal performance standards for school bus windshield retention; design of the boarding door controls in certain small school buses; and the need to correct improper installation and use of lapbelts and other restraints.

The report stated that occupants of small school buses with a GVWR under 10,000 pounds, built to standards, generally fared well in the accidents investigated. Injuries, when sustained, were usually minor and were primarily to the face, head, or lower limbs. Unrestrained and lapbelted passengers showed similar patterns of injuries. Seating position, more than restraint status, appeared to influence the severity of injuries.

In summary, NHTSA has issued school bus safety standards and continues to review the standards in light of any new information to determine if school children would benefit from additional or more stringent performance requirements. The agency believes that it is important to have pupil transportation programs that allow for safe transport of children, drivers, and other occupants of school buses.

III. Magnitude of the School Bus Problem

School bus transportation continues to be one of the safest forms of transportation. In terms of injury and fatality rates, school buses afford school children an effective and safe means of transportation to and from school and school-related activities. School buses are significantly safer than other means of transportation (mainly passenger cars) normally used by school-age children. According to the National Safety Council's *Accident Facts* (1991), in 1989, fatality rates per hundred million passenger miles were 1.12 for passenger cars and 0.04 for school buses. Also in 1989, passenger cars were involved in 72.3 percent of all traffic crashes and 61.2 percent of all fatal crashes; whereas school buses were involved in only .2 percent of all traffic crashes and in .2 percent of all fatal crashes.

Each year, however, there are crashes involving school buses, and these crashes result in injuries and, occasionally, in fatalities to school children. Whereas most school bus-involved crashes are minor, the possibility of a more serious crash or catastrophic incident still remains, such as the tragic crashes of May 1988, in Carrollton, Kentucky; the September 1989, crash in Alton, Texas; and the July 1991, crash in Palm Springs, California. While it is not suggested that the number of injuries or fatalities to school children in school bus crashes is acceptable, it is important to note that many of the school bus crashes which result in fatalities and/or serious injuries involve unique circumstances that most likely would not occur again. Developing crash specific crashworthiness countermeasures may not always be reasonable when viewed in terms of how to improve the overall effectiveness of school bus safety.

Figure 1 shows all vehicle occupant fatalities. Included are the number of preschool (0-4), school-age (5-18) children, and adults (19+) fatally injured in motor vehicle crashes in 1990, and the type of vehicle they were in at the time.

Since the definition of "school bus" differs among the various jurisdictions responsible for registering the vehicles, there is no consistent means of determining an accurate

Figure 1

Occupant Fatalities by Vehicle Type and Age Group

	Totals	Age 0-4	Age 5-12	Age 13-18	Age 19+	Unknown
Passenger Car	24,092	476	457	3,042	20,086	31
Light Truck/Van	7,387	101	164	701	6,419	2
Medium Truck	134	2	0	7	125	0
Heavy Truck	571	2	4	7	556	2
Motorcycle	3,244	2	27	310	2,904	1
School Bus	13	0	5	2	6	0
Bus (Other)	19	0	1	4	14	0
On/Off Road Vehicle	1,214	4	35	149	997	29
Other Vehicle	296	4	19	55	218	0
Unknown	164	3	4	15	141	1

Source: FARS 1990

count of the number of "school buses" transporting school children in the United States. Many publicly-owned school buses are registered as "exempt" vehicles without an annual registration, which makes accurate accounting even more difficult. Also, "school buses" as defined by some states are actually "passenger vans." The most recent available data on school buses by registrations, exposure, and accidents appear to be from the National Safety Council's survey of state departments of education and state traffic authorities. For the 1989-1990 school year, it was estimated that:

- 380,000 buses were used to transport pupils
- 22 million pupils were transported
- 21 million miles were driven per day (180 days per school year)
- 3.8 billion miles were driven

Since significant safety improvements were mandated in school buses effective April 1, 1977, available registration data suggest that about 90 percent of the school bus-type vehicles currently in operation as school buses are model year 1977 or newer.

In order to conduct an in-depth detailed assessment of school bus crashes (injuries), thorough data from each crash would be necessary. Other than information from selected crashes, such as was used in the NTSB report previously mentioned, such data are not available. However, limited data on crashes and crash injuries are available in police accident files. While not sufficiently detailed for in-depth analysis, these state police accident files provided a measure of the magnitude of the school bus injury problem. A review of some state accident files, the agency's National Accident Sampling System (NASS), and the National Safety Council

Figure 2

School Bus Involved Crashes - 1989 to 1990 School Year

Crashes Involving Another Vehicle	23,000
Crashes Into a Fixed Object	2,300
Non-Collision Crashes	500
Not Specified Type Crashes	3,200
TOTAL SCHOOL-BUS INVOLVED CRASHES	29,000
Total Number of Property Damage Only Crashes	22,000
Total Number of Pupils Injuried	9,800
Other (Pedestrians, Occupants, Other Vehicle)	4,700
Total Number of Persons Injured	14,500

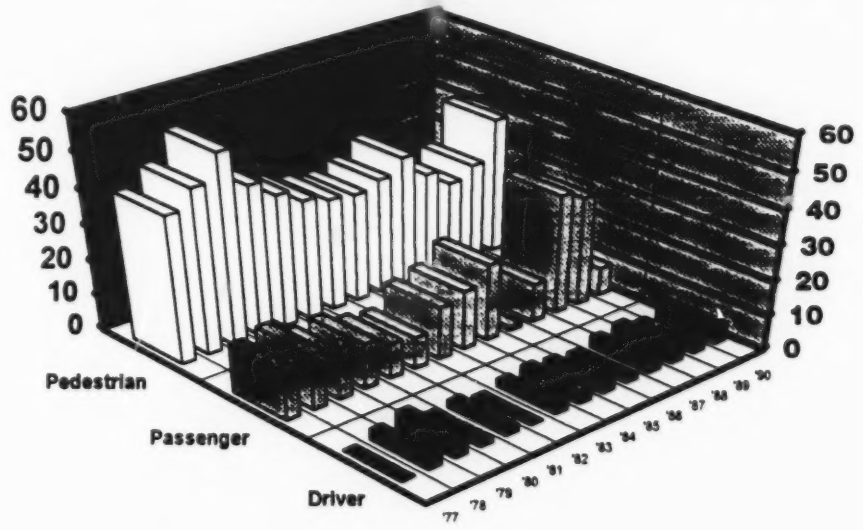
data provide the following insight into school bus occupant crash injuries:

- The National Safety Council estimated that school bus occupants (pupil) sustained 9,800 injuries during the 1989-1990 school year.
- Data indicate that approximately half of the injuries occurring in school bus crashes are to the head, face, and neck.

While there are few data on school bus crash injuries, *Accident Facts* and FARS provided current data regard-

Figure 3

Fatalities Involving School Buses
1977 through 1990



ing school bus crashes. The National Safety Council's *Accident Facts* details crash data for the 1989-1990 school year in Figure 2.

The agency's Fatal Accident Reporting System (FARS) provides complete information on all fatal crashes, including school-bus type vehicles. FARS data were analyzed to determine the location of the fatally injured persons in school bus-related crashes. Since the data include all school bus body types, some of the crashes and resulting fatalities may not involve pupils. Many used school buses are sold to church and civic organizations, but these vehicles are still classified as "school buses" in FARS. Additionally, many school bus-type vehicles are manufactured for sale to non-school organizations (company buses, airport buses, etc.), but they would still be classified as a "school bus" in FARS because of the body style.

Figure 3 provides information on persons killed in school bus-related crashes from 1977 to 1990. It is clear that the occupants of the school bus are exposed to the least risk, when compared to pedestrians (most of whom are getting on or off of the school bus) and the occupants of the other vehicle (s) that were involved in the crash.

Figure 4

Pedestrian Fatalities in School Bus Related Crashes

1986:	Age 0-4	Age 5-9	Age 10-14	Age 15-19	Age 20+	Unknown	Total
Struck By Bus	3	21	2	0	5	0	31
Struck By Other Vehicle	0	6	3	2	5	0	16
TOTAL	3	27	5	2	10	0	47
1987:							
Struck By Bus	2	20	2	1	7	0	32
Struck By Other Vehicle	0	6	3	0	2	0	11
TOTAL	2	26	5	1	9	0	43
1988:							
Struck By Bus	6	9	0	0	4	0	19
Struck By Other Vehicle	0	9	5	0	3	0	17
TOTAL	6	18	5	0	7	0	36
1989:							
Struck By Bus	4	11	0	0	10	0	25
Struck By Other Vehicle	0	4	2	0	1	0	7
TOTAL	4	15	2	0	11	0	32
1990:							
Struck By Bus	2	16	3	1	10	0	32
Struck By Other Vehicle	1	3	1	1	1	0	7
TOTAL	3	19	4	2	11	0	39

V. Pedestrians and School Bus Safety

Vehicular crashes are not the only crashes involving school buses. Injuries and fatalities occurring to pedestrians while travelling to and from school and school bus loading zones are addressed as part of school bus safety. The National Safety Council reports that during the 1989-1990 school year most pedestrians were killed while either approaching or leaving a loading zone and that more than half of the pupil pedestrian victims were struck by the school bus they were entering or leaving. The National Academy of Science Special Report No. 222, "School Bus Safety," states that injuries re-

ceived at bus stops tend to be more severe than injuries received on board a bus. The report also states that, as pedestrians, children between the ages of five and six are particularly vulnerable, accounting for more than one-half of the children fatally injured by school buses. Pedestrians killed in school bus-related crashes accounted for 28 percent of total fatalities from 1986 through 1990. Of the 197 fatally injured pedestrians, 139 were struck by the bus, and the remaining 58 were struck by another vehicle. Figure 4 presents school bus-related pedestrian fatalities by age groups for years 1986 through 1990.

Approximately 75 percent of pedestrian fatalities involving school buses over this five year period were of school age (less than 20 years of age); of these, approximately 69 percent were struck by the bus.

Figure 5 illustrates the number of school age pedestrians fatally injured on a weekday between the hours of 6:00 a.m. and 9:00 a.m. from September through May 1991; and Figure 6 illustrates the number of school age pedestrans fatally injured on a weekday between the hours of 2:00 p.m. and 5:00 p.m. from September through May 1991. Efforts have been directed at lowering the number of school age pedestrian fatalities during these time periods. Behavioral and vehicular modifications have been implemented to create a safer environment for pupils walking or riding a bus or bicycle to school.

Countermeasures addressing pedestrian issues involving pupils in school bus loading zones and pupils on the way to and from schools have been developed and implemented. Campaigns to increase motorists' awareness of pupils are also effective measures to increase the safety of pupils. One

Figure 5

Pedestrians Fatally Injured on Weekdays between 6a.m. and 9a.m., September through May 1991

	Age 0-4	Age 5-9	Age 10-14	Age 15-19	Age 20+	Unknown	Total
Pedestrians	6	22	16	16	260	4	324
Bicyclist	1	3	9	2	40	1	56
Other Cyclist	0	0	0	0	0	0	0
Unknown Occupants	0	0	1	1	1	0	3
TOTALS	7	25	26	19	300	5	382

Source: FARS 1991

Figure 6

Pedestrians Fatally Injured on Weekdays between 2p.m. and 5p.m., September through May 1991

	Age 0-4	Age 5-9	Age 10-14	Age 15-19	Age 20+	Unknown	Total
Pedestrians	57	81	51	23	391	3	606
Bicyclist	1	19	43	11	48	0	122
Other Cyclist	0	0	0	0	0	0	1
Unknown Occupants	1	2	2	0	5	0	10
TOTALS	59	102	97	34	444	3	739

Source: FARS 1991

program designed to teach young children how to become safer pedestrians is the Willy Whistle series. Another educational program that is being developed is the Pedestrian Safety Training Program for Young School Bus Riders. This comprehensive curriculum is designed for students in kindergarten through the twelfth grade, and is targeted at rural and suburban children.

V. Seat Belts and School Buses

The issue of seat belts and schools buses continues to raise many questions. While there are no concrete answers, there are some guidelines to evaluate when considering putting seat belts on school buses.

Mentioned earlier was the fact that a set of safety standards for school buses became effective on April 1, 1977, and among these was FMVSS 222 "School Bus Passenger Seating and Crash Protection." This standard established minimum crash protection levels for occupants of all school buses. For large school buses, those with a gross vehicle weight rating above 10,000 pounds, the standard requires occupant protection through the concept of compartmentalization. The National Transportation Safety Board and the National Academy of Sciences has confirmed the effectiveness of compartmentalization by independent studies. Under current requirements of FMVSS 222, small school buses, those with a gross vehicle weight rating of under 10,000 pounds, must be equipped with lap belts at all designated passenger seating positions. For small school buses manufactured on or after September 1, 1991, manufacturers have the option of installing lap/shoulder belts at all designated passenger seating positions. The agency believes that these belts are necessary and effective in providing occupant protection in those vehicles because of their smaller size and weight, which is closer to that of passenger cars and light trucks.

As cited earlier, in the Surface Transportation and Uniform Relocation Act of 1987, Congress directed the Department of Transportation to contract with the National Academy of Science (NAS) to "conduct a comprehensive study and investigation of the principal causes of fatalities and injuries to school children riding in school buses and of the use of seat belts in school buses and other measures that may improve the safety of school bus transportation." The purpose of the NAS study was to "determine those safety measures that are most effective in protecting the safety of school children while boarding, leaving, and riding in school buses." Special Report No. 222 issued in May 1989 was the result of this Congressional directive and confirmed the high level of safety provided by the Nation's school bus fleet.

In its conclusions, the NAS committee noted that "the overall potential benefits of requiring seat belts on large school buses are insufficient to justify a Federal requirement for mandatory installation. The funds used to purchase and maintain seat belts might better be spent on other school bus safety programs and devices that could save more lives and reduce more injuries." The committee pointed out that since "children are at greater risk of being killed in school bus loading zones (i.e., boarding and leaving the bus) than on board school buses, "a larger share of the school bus safety effort should be directed to improving the safety of school bus loading zones.

While there are no Federal requirements for safety belts on large school buses, states are free to install them if they feel it is in the best interest of safety in their state. However, as noted in the NAS report, if the safety belts are to be beneficial, "states and local school districts that require seat belts on school buses must ensure not only that all school bus passengers wear the belts, but that they wear them correctly."

VI. Vans Used As School Buses

The use of vans in lieu of school buses has become a significant issue in recent years. Many jurisdictions, in an effort to save money, have purchased passenger vans or multi-purpose vehicles to transport students.

Under Federal law, any passenger motor vehicle, including a van, designed for carrying 10 or more persons is classified as a bus. A bus is classified as a school bus if it is used or intended for use in transporting students to and from school or school-related activities.

The agency believes that school buses should be as safe as possible. Accordingly, minimum safety standards that all new school buses must meet have been established. Federal law prohibits dealers from selling or leasing vehicles with a capacity of more than 10 persons, intended for transporting students to and from school or school-related activities, unless the vehicles comply with the applicable Federal school bus safety standards. Subject to state law, a school could use vans with a capacity of 10 or less to transport school children; however, the agency advises against this action.

Another issue is that some jurisdictions have acquired multi-purpose vehicles with 12 to 15 passenger capacity and used them as school buses. While they may not have been sold to them legally, their continued use is dictated by state law.

NHTSA believes that safety standards requiring a higher level of safety performance for school buses are appropriate. Thus, while these van type school buses are somewhat more expensive than a conventional full-size van, the increased levels of safety justify the higher cost. We believe that school children should be transported in vehicles that provide them with the highest levels of safety.

VII. Current and Future Agency Activities

The agency is in the process of considering amendments to or has published the following vehicle safety standards to improve the level of school bus safety.

FMVSS No. 111, Rearview Mirrors, intended to reduce the number of deaths and injuries that occur when the driver of a motor vehicle does not have a clear and reasonably unobstructed view to the rear. The standard is being amended to establish performance-oriented requirements to ensure a complete view of critical areas in front of, along side of, and to the rear of school buses.

FMVSS No. 131, School Bus Pedestrian Safety Devices, intended to reduce the risk to pedestrians near stopped school buses. The standard requires new school buses to be equipped with a stop signal arm to be located on the left side of the bus. This reflective stop arm is to be automatically deployed, at a minimum, during the entire time that the red signal lights are activated. The stop arm may have two flashing red lights in-

stead of being reflective. This standard became effective September 1, 1992.

FMVSS No. 217, Bus Window Retention and Release, intended to minimize the likelihood of occupants being thrown from the bus and to provide readily accessible emergency egress. The amendment to FMVSS No. 217, published in November 1992, establishes minimum requirements, based on seating capacity, for emergency exits in school buses and to improve access to emergency doors. The new rule takes effects May 2, 1994.

FMVSS No. 221, School Bus Body Joint Strength, intended to reduce deaths and injuries resulting from the structural collapse of school bus bodies during crashes. The amendment to FMVSS No. 221 proposes to extend its applicability to all school buses, to revise the joint strength testing procedures, and to revise the joint strength exemption provided for maintenance access panels.

FMVSS No. 222, School Bus Passenger Seating and Crash Protection, intended to reduce the number of deaths and the severity of injuries that result from the impact of school bus occupants against structures within the vehicle during crashes and sudden maneuvers. The standard was amended on January 15th, 1993, to provide minimum performance requirements for wheelchair securement/occupant restraint devices and to establish forward-facing wheelchair locations.

FMVSS No. 302, Flammability of Interior Materials, meant to reduce deaths and injuries to motor vehicle occupant caused by vehicle fires, especially those originating in the interior of the vehicle, from sources such as matches or cigarettes. The agency has been studying whether the fire resistance requirements for school buses need to be amended.

The agency continues to assess the crashworthiness of school buses to make an extremely safe form of transportation even safer. The agency also continues to assess relevant crash avoidance safety standards for school buses, such as braking, lighting, and visibility. This is particularly important to pupil safety since most fatalities and a large number of injuries in school bus crashes occur outside the school bus.

Vehicle safety standards are not the only agency programs that affect the safety of children on school buses. There are also cooperative Federal-State programs for truck and bus safety sponsored by the Federal Highway Administration (FHWA) which can help maintain and improve school bus safety. These include programs for commercial vehicle inspections and stricter licensing standards for commercial vehicle drivers, which became effective on April 2, 1992.

When issuing Highway Safety Program Guideline #17 on pupil transportation safety, NHTSA included the issue of pedestrian safety within the guideline as well. Two critical parts of the school bus safety issue, which had not been addressed previously, were school children walking to and from school bus stops and the loading and unloading of school buses. Crashes that involve these activities comprise two-thirds of the total pupil pedestrian casualties each year.

NHTSA has improved pedestrian safety at all levels. NHTSA and FHWA conducted a rulemaking in 1991 to determine if pedestrian and bicycle safety should be included in the national priority program. In November 1991, the agencies announced that these two areas were added to the priority list, enabling the safety of school children as pe-

destrians to receive special attention and funding.

Additionally, as a part of its consumer information series, in 1988 the agency prepared a brochure providing the public with concise, easily understood information on school bus safety. This information deals with the Federal safety standards that apply to school buses and the critical aspect of the day-to-day operation of school buses. This brochure is currently being updated.

In recent years, NHTSA has had extensive involvement in a number of school bus-related activities. Most notable is the cooperation the agency provided to the National Transportation Safety Board before, during, and after its public hearing on the Carrollton, Kentucky crash.

As mentioned earlier, the Surface Transportation and Uniform Relocation Assistance Act of 1987 gave the Department of Transportation the option of earmarking up to $5 million per year for fiscal years 1989, 1990, and 1991. These funds were to be used to implement school bus safety countermeasures based on recommendations in the May 1989 NAS report "Improving School Bus Safety." The Department of Transportation made $4.5 million available to the states in fiscal years 1990 and 1991. All states applied for and received funding.

A Federal Register notice issued July 20, 1989 identified funding requirements. In both years, most of the program activities underwritten with Section 402 funds were from the "most effective" category. The most frequently requested category for funding was school bus driver training; 41 states and territories requested aid in this area. Four states trained drivers to meet the special needs of the medically handicapped; two states developed special training for driving in severe winter weather; and two states developed programs designed to assist school bus drivers in qualifying for the new Commercial Driver License. One state devoted training efforts to develop driver-examiners, and another to develop a train-the-trainer program for school bus drivers.

As a second level of emphasis, many states selected pedestrian and bicycle activities as areas in which to improve safety awareness of pupils who walk or ride bicycles to schools and bus stops. A third area of emphasis was public information and education aimed at instructing motorists to observe the school bus laws and to be concerned about safety of children being transported to schools.

VIII. Summary

In summary, school buses are a very safe means of transportation. School buses transport children to and from school and school related activities with a safety record to be envied. While catastrophic school bus crashes have occurred, they are rare events. Most school bus crashes are minor. In many crashes, such as those involving passenger cars and light trucks, the school bus has the advantage of size and weight. As a result, many more people are killed each year in vehicles that crash into school buses than are killed in school buses. It is difficult, if not impossible, to develop crashworthiness countermeasures that would protect school bus occupants in a catastrophic crash. The crash forces involved are so great that any reasonable structural design cannot maintain occupant compartment and structural integrity. The agency focuses on pupil transportation and will continue to safeguard the pupils being transported on school buses.